A Fine Specimen of Upright Cherry—Prunus Serrulata Amanogawa

18th Western Chapter, N.S.T.C.—Portland, Ore., June 27-30

Present Knowledge Concerning Oak Wilt — *T. W. Bretz*

Ovotran Wettable A New Miticide — *F. W. Fletcher*

May - June, 1951 — *The Journal of American Arboriculture* — Vol. 11—No. 4

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TREES Magazine is a bi-monthly Journal published at Cleveland, Ohio, by Edward H. Scanlon, and is devoted to the furtherance of the technical and business administration of Trees (Street and Ornamental); Parks (Municipal and National); and Forests (State, National and Private), in the U. S. Scanlon Publishing Co., P. O. Box 5607, Cleveland, Ohio. Subscription by mail $2 per year; outside United States, $2.50. Advertising rates upon inquiry. Closing date for advertising copy—10th of month preceding date of issue. Unsolicited manuscripts must be accompanied by return postage.

ALONG THE WAY

With . . .
EDW. SCANLON

■ Well a LOT OF THINGS have happened since the LAST EPISODE of this DRAMATIC PIECE. The birds have COME BACK—the LEAVES AND FLOWERS are back—the COLD IS GONE (I hope) and BRETHREN IT'S WARM again —Oh, I FORGOT, the weeds are BACK ALSO, and LAWN CUTTING.

■ *An ITEM OF NOTE, for the omission of which I have BEEN SEVERELY CHASTENED by the author—is the PUBLICATION OF a 70-PAGE booklet "EROSION CONTROL ON CALIFORNIA STATE HIGHWAYS," a very FINE BOOK on the subject, as ONE WOULD EXPECT because of the subject being taken from the EXPERIENCES OF THE OLD MAESTRO himself, H. DANA BOWERS, Supervising LANDSCAPE ENGINEER for the HIGHWAY DIVISION.*

■ Had a NICE VISIT here with SAM RICH, nursery impresario of the RICH AND SONS NURSERY, HILLSBORO, ORE. SAM is doing a BIG PLANTING JOB in SOUTH DAKOTA and came on TO LOOK over OUR GREENERY.

■ *How I ENVY BERT CRAN, SUPT OF SHADE TREES for NEW HAVEN. BERT is making a TRIP TO SWITZERLAND in December. On THE ITINERARY will be stops in FRANCE, HOLLAND and SCOTLAND. DON'T FORGET to get some GOOD SLIDES of OUTSTANDING STREET TREE design, BERT. LUCKY GUY.*

■ One of OUR BEST EAST COAST NEWS correspondents is OPERATOR ZX6, HARRY TURNER, CITY ARBORIST at EAST ORANGE. Harry had a big "LAST FRIDAY IN APRIL" ARBOR DAY program this year—CITY-WIDE and very IMPRESSIVE and EDUCATIONAL.

■ *Am LOOKING FORWARD to my FIRST WESTERN SHADE TREE CONFERENCE in five years. MY BABY will celebrate its SEVENTEENTH BIRTHDAY at PORTLAND, ORE., June 27-30.*

■ CHARLIE IRISH will also MAKE THE TREK to the WESTERN CONFERENCE. That ought to be a NICE AIRPLANE ride.

■ *Hope to visit SACRAMENTO and SOUTHERN CAL., on the junket to LOOK OVER the old STAMPING GROUNDS. Ought to be QUITE A BIT of growth on some of the NICE TREES I knew AROUND THERE.*

■ The BLACK LOCUSTS outside the window, that LOOKED SO FORLORN in the FEB. ISSUE, are now LOVELY with their WHITE TRESSES. The delicious SPICY FRAGRANCE of this unappreciated TREE is worth some of its faults—WHO DOESN'T have faults?

■ *A BULLETIN by BILL BECKER of the UNIVERSITY OF MASS. has just been released. The title is "CONTROL OF INSECT PESTS OF ORNAMENTAL TREES AND SHRUBS." Very good and I imagine they'll SEND IT FOR FREE—Univ. of Mass., Amherst, Special Circular No. 183.*

■ MRS. GARRETT SMITH, former Plainfield, N. J. SHADE TREE COMMISSION MEMBER, and now a resident of BROCKPORT, N. Y., is beginning to KINDLE A FIRE to establish the "LAST FRIDAY IN APRIL AS ARBOR DAY" in NEW YORK. Let's get this PROGRAM MOVING so we can begin to DISPENSE EXPLICIT, intelligent information on TREE USE.

■ *DICK WHITE has lined up a SHADE TREE SYMPOSIUM for the AMERICAN ASSOCIATION OF NURSERYMEN'S convention at NEW ORLEANS, July 16-21. JOHN SIEBENTHALER will be moderator, LOUIE CHADWICK, WILLIAM FLEMER III, JAMES FORET, Louisiana Experimental Station, an as yet UNNAMED PERSON from the west coast, and YOURS TRULY who will show 3rd DIMENSIONAL slides on "NEW SHADE TREES FOR STREETS AND SMALL HOMES."*

■ The ABOVE PICTURE shows HARRY BIRDSALL Jr., President of the ARBORISTS ASSOCIATION OF NEW JERSEY presenting a cup to the "OUTSTANDING TREE SKINNER OF NEW JERSEY FOR 1950." The champ is KEN GREGORY, employed by the RUTHERFORD SHADE TREE DEPT. The cup is PRESENTED ANNUALLY by the NEW JERSEY FEDERATION OF SHADE TREE COMMISSIONS, the CERTIFIED TREE EXPERT SOCIETY and president HARRY'S organization. KEN is on the right.

■ *On April 16th ALTON OGDEN, CITY FORESTER of FLINT, MICH., died after an illness of SEVERAL MONTHS. AL was a REAL ENTHUSIASTIC TREEMAN and had made several VALUABLE CONTRIBUTIONS to the CONFERENCE SELECTION COMMITTEE work. He had been CITY FORESTER in Flint for 20 YEARS and had built a FINE ORGANIZATION. He was ONE of the NICER KIND OF GUYS you meet ALONG THE WAY and his PLEASING PERSONALITY will be MISSED at future CONFERENCES.*

■ A WELL DESERVED honor was RECENTLY BESTOWED on our esteemed friend WILLIAM HERTRICH, curator emeritus of the HUNTINGTON BOTANICAL GARDEN in SAN MARINO, CALIF. The honor was the award of the GEORGE ROBERT WHITE MEDAL for HORTICULTURAL CONTRIBUTIONS. This honor was presented to MR. HERTRICH by ALFRED HOTTES for the MASSACHUSETTS HORTICULTURAL SOCIETY. It was the 40th YEAR the award has been made.

■ *We extend our SINCEREST SYMPATHY to our dear friend NORM ARMSTRONG AND HIS FAMILY on the UNTIMELY DEATH last month of MRS. ARMSTRONG. She had been in poor health for some time but the end came suddenly.*

■ OHIO has FINALLY entered the CHARMED CIRCLE of states HAVING LEGALLY ESTABLISHED the "LAST FRIDAY IN APRIL" as ARBOR DAY. Senate Bill 134 PASSED THE OHIO HOUSE MAY 25th by a 93 to 1 vote. WHAT KIND of a GUY would VOTE AGAINST progressive legislation SUCH AS THIS. OHIO is NUMBER ELEVEN in the NATIONAL ARBOR DAY program INSTITUTED BY TREES MAG ten years ago. SLOW BUT SURE.

■ *WE HOPE that somehow CONSTRUCTIVE INFORMATION on PROPER TREE USE can be compiled FOR DISTRIBUTION when a SUFFICIENT ADDITIONAL number of states adopt the "LAST FRIDAY IN APRIL" as ARBOR DAY—that there will be fewer costly mistakes made in a noble endeavor.*

■ THANKS to WILLARD EKOLA OF ASHBY, MASS., for giving me the location of a LARGE RED LEAVED WEEPING BEECH. It is growing at 178 PEARL HILL ROAD in FITCHBURG, Mass. Thru the good offices of BILL GULLAM, CHARLES SWEENEY, the CITY FORESTER of FITCHBURG has been contacted to try and arrange to GET SOME 35 m. m. KODACHROMES of this MASTERPIECE.

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Box 5607, Cleveland 1, Ohio

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May - June, 1951 **Journal of the National Arborist Association** Vol. 11—No. 4

EDWARD H. SCANLON, Editor
Box 5607, Cleveland 1, Ohio
ADams 5-2357

"No place is complete without trees. A home without trees is charmless; a road without trees is shadeless; a park without trees is purposeless; A COUNTRY WITHOUT TREES IS HOPELESS."

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Out On A Limb

PLANT PROPAGATORS SOCIETY PROPOSED

Many years ago there functioned in this country a very worthwhile organization. The American Plant Propagators Association expired because of the impact of the depression. The twelfth and last session was held in 1932.

This organization came to our attention some months ago, when in rummaging thru some old magazines we discovered a copy of the proceedings and pounced on it like a tiger on a mouse. Propagation information, in case you may not know it, is not easily obtained; it is not available in any comprehensive printed form and many short-sighted and narrow-minded people have the idea that when they have discovered some little short cuts in the propagation of some certain plant they have discovered the secret of the ages, and it must die with them. Well, let it. Even so there are a number of scientific progressive propagators who do not share this feeling as the roster of membership in the old organization shows.

It is the belief of TREES Magazine that a new organization is badly needed and would be enthusiastically supported by progressive nurserymen, scientists and arborists. Consequently we have contacted a number of people at the various Botanic Gardens, Arborists, Federal and State agencies, Universities and Nurserymen—all were favorable to the organization of a new society and assured they would attend a founding meeting. It is proposed to name the new group the PLANT PROPAGATORS SOCIETY and to have the first meeting in Cleveland, Ohio, Oct. 25th and 26th. All persons interested in this meeting should contact the Editor of TREES at their convenience. A program is being formulated and final plans will be announced in later issues of TREES.

TREES IN PUBLIC PARKS

The determination of the selectmen of the town of Winchester, Massachusetts, to remove a row of large Elm trees which encroach on the principal street of the town, has met with such a storm of opposition among the inhabitants, and has been so generally condemned by the press of the state, that this particular row of trees will probably continue to shade the Winchester highway.

This vigorous protest against cutting down these trees, which we have reason to believe is entirely justified by the peculiar circumstances of the case, represents the usual attitude of Americans toward the trees on their public grounds. They object on general principles and on all occasions to cutting down a tree, without stopping to consider whether it should be cut or not, and therefore often insist that trees should be left standing when really they ought to be removed.

Park commissioners and other officers charged with the care of public grounds frequently try to defend themselves against charges of neglect of duty in such matters by entrenching themselves behind the public sentiment against the cutting

of trees, which they claim is often so strong that they are helpless to act. Every expert, for example, who visits Central Park, in this city (New York), see that the excessive crowding of the trees is rapidly destroying their beauty and threatening their lives, and that hundreds of trees should be cut out at once in order to maintain the park in good condition. This has been explained year after year, and from time to time the park authorities have removed occasional trees here and there, but such work should go on steadily and constantly, and in a great pleasure garden like Central Park the axe should never be allowed to rest. The feeling against cutting a tree is, however, so strong in this community that it is exceedingly difficult for commissioners to accomplish any systematic work in this direction. If, however, the importance of this matter was once clearly understood, the public would not only uphold but demand these operations, and it is, therefore, one of the plain duties of Park Boards and their subordinates to instruct the people on this subject by object lessons and in every other possible way.

We allude to Central Park because it is visited yearly by many people who see for themselves the need of prompt action with the axe in order to develop its greatest possibilities and beauty, and because we have been somewhat familiar with the workings of its management, but the same thing can be said with nearly equal truth of the condition of the plantations in all American parks. In Prospect Park, Brooklyn, the thinning of the border plantations has been so long delayed that their usefulness has gone, and they must be renewed at a very large cost and the loss of twenty-five or thirty years. In the Buffalo park the trees, about twenty-five years old, are everywhere crowding themselves out of shape, and, unless steps are taken to relieve them at once, the beauty of these plantations will be ruined forever. This condition of things exists also in the parks of Chicago and St. Louis, and in Druid Hill Park, Baltimore, and Fairmount Park, Philadelphia, where many old trees have been allowed to die prematurely through the neglect to apply simple remedies of preservation. Boston, however, enjoys the reputation of having the worst trees in its parks of any American city. The city has spent millions in securing park lands and in building elaborately constructed park roads and expensive park buildings, but little or nothing has been done for the trees which were growing on these lands; these are overcrowded, unshapely, full of dead and dying branches, and are harborers of dangerous insects, which spread from the parks into adjacent lands.

This general neglect of the trees in public parks in American cities cannot be explained by the excessive love felt for trees by the public, as park officers often assert. The cause must rather be looked for in the general indifference of Americans to their trees, and in the unfortunate fact that the tendency of American park makers in recent times is more to the perfection of park drives and walks and to the erection of expensive buildings, retaining walls, bridges and other masonry structures, than to the care and maintenance of plantations. It is easier to lay down the lines of a gracefully curved driveway and to get it satisfactorily built than it is to make and maintain a good plantation of trees; and the thorough knowledge of trees which is essential for good park planting, comes only from long study and special powers of observation. But, on the other hand, park makers and park commissioners must remember that a road, a bridge or a building can be completed in a single season, and that only a few months are required to change the roughest piece of ground into a smiling lawn, while it takes the best part of a century to bring a tree to perfection, and that this perfection can never be obtained if it is allowed to remain neglected during any considerable period. Roads and walks and buildings of all sorts are needed in parks to make them available for public use, but they are necessary evils to be subordinated as far as possible to the natural features which give them their real value. The most important of these natural features are the trees, and parks are beautiful and useful as they are furnished with good trees; it is certainly to be deplored that the modern tendency in park management is to do everything else in a park but care for the trees, which, as we have already said, are not only the most essential features of a park, but the most difficult to obtain. Experts in the care of ornamental trees are sadly needed in the United States, and if they can be found the managers of our parks singularly neglect their duties if they fail to avail themselves of the technical knowledge of such men.

(Editor's Note: This editorial appeared in *Garden and Forest,* December 23, 1896. Prof. Charles Sprague Sargent was the editor. While the particular cities mentioned may no longer be offenders, the principle of interference by so-called "tree lovers" still obstructs the orderly management of public trees by qualified men. All in all the editorial could have been written today.)

Duncan McDuffie Was Outstanding Conservationist

Duncan McDuffie, widely known conservationist and civic leader, who died in Berkeley on April 21, served as President of the Save-the-Redwoods League since 1944. He had been a Director of the League since 1925, and pioneered in the development of the California State Park System, in which the giant Redwoods saved through the League are included. He was Chairman of the California State Parks Council, the organization coordinating the efforts of all groups which successfully campaigned for the State Park Bonds, which were approved by a majority of almost three to one by the voters of the State in November, 1928.

Duncan McDuffie served as President of the Sierra Club in 1929-31, and again in 1943-45. He was awarded the Cornelius Amory Pugsley Medal by the American Scenic and Historic Preservation Society for distinguished service in the field of State Parks. He was always a champion of the National Parks, and was a close friend of Stephen T. Mather, first Director of the National Park Service, and the succeeding directors, including Horace M. Albright and Newton B. Drury, of California. Duncan McDuffie was Chairman of the Yosemite Advisory Board, on which he rendered invaluable service for many years.

He was graduated from the University of California in 1899, and in 1950 received from his Alma Mater the honorary degree of LL.D., in recognition of his outstanding contributions to park conservation and civic leadership.

Duncan McDuffie wrote of the finest of the giant Redwood forests of California:

"To enter a primeval grove of giant Redwoods is to step within the portals of a cathedral dim, lofty, pillared, peaceful.

"But this temple which the Great Architect has been building for a score of centuries is incomparably nobler, more beautiful and more serene than any erected by the hands of man. Its nave is loftier than that of Amiens and longer than that of St. Peter's. Its wine-red shafts, rising clean and straight over two hundred feet, are more numerous than the pillars of Cordova; its floor is carpeted with a green and brown mosaic more intricate than that of St. Mark's; its aisles are lit with a translucence more beautiful than that which filters through the stained glass of Chartres; its spires pierce higher than those of Cologne; its years are greater than those of the first lowly building devoted to Christian service.

"To destroy this noblest of places of worship would be more irreparable than was the destruction of the cathedral of Rheims."

National Shade Tree Conference—Cincinnati, August 27-31

Our Present Knowledge Concerning Oak Wilt

Contribution of the Division of Forest Pathology, Bureau of Plant Industry, Soils and Agricultural Engineering, U. S. Department of Agriculture in cooperation with the Missouri Agricultural Experiment Station. Approved as Journal Series Paper No. 1252 of the Missouri Agricultural Experiment Station by the Director.

By T. W. Bretz

Pathologist, Division of Forest Pathology, Bureau of Plant Industry, Soils and Agricultural Engineering, U. S. Department of Agriculture in Cooperation with the Missouri Agricultural Experiment Station

Oak wilt, caused by the fungus *Chalara quercina* was found in many new locations during 1950. The States in which it is now known to occur comprise approximately one-third of the natural range for oak species common to the eastern United States. As Noel B. Wysong pointed out in his article describing the devastating nature of the disease (September-October, 1949 issue of Trees Magazine), it is no longer a tree ailment restricted to a remote locality. Though its exact range in the hardwood belt remains to be determined and its full potentialities are still a matter of conjecture, the disease has truly become a serious problem to tree men throughout the Midwest, the East and the South.

Prior to 1950, oak wilt was known to occur in an area extending from southern Wisconsin and Minnesota to southern Missouri and Illinois, and from western Iowa to western Indiana. Its present known distribution extends from eastern Kansas and Nebraska to central Pensylvania, and as far south as west-central Arkansas (Fig. 1). The known oak wilt locations in Pennsylvania, Ohio, Indiana, Kansas, and Nebrask at present are few in number. However, no intensive surveys for the disease have been made in these states and it seems probable that additional infection centers will be found in these and other areas from which it has not yet been reported.

Oak wilt foliage symptoms are most conspicuous from mid-June to mid-September. In species belonging to the red and black oak group, symptoms usually

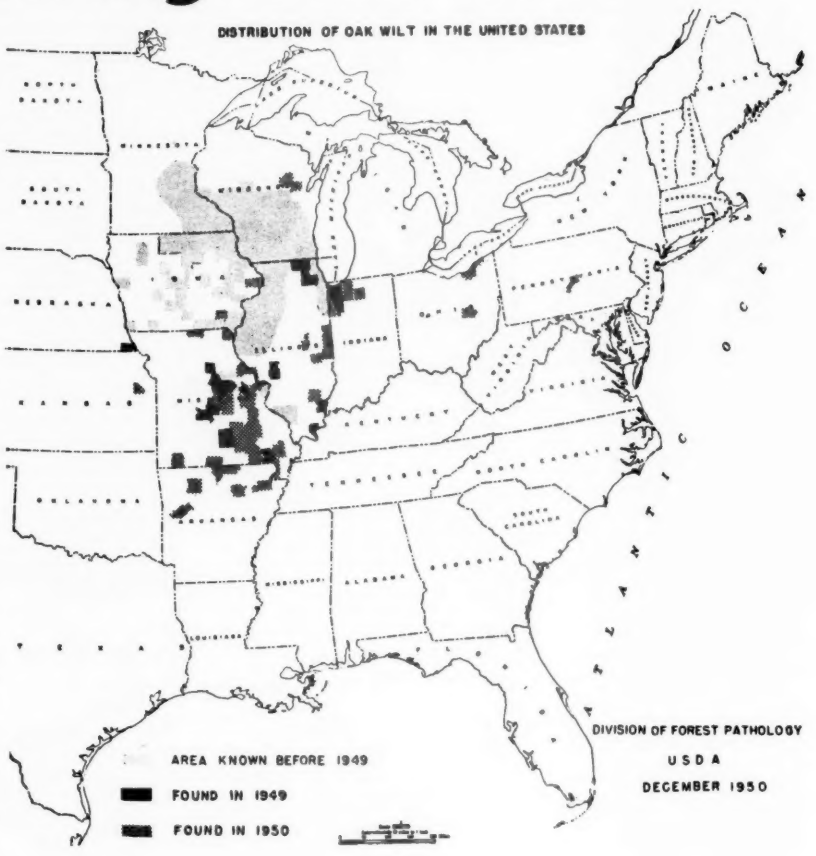
DISTRIBUTION OF OAK WILT IN THE UNITED STATES
AREA KNOWN BEFORE 1949
FOUND IN 1949
FOUND IN 1950
DIVISION OF FOREST PATHOLOGY
U S D A
DECEMBER 1950

Figure 1

appear first in the upper part of the tree and at the ends of the lateral branches, progressing rapidly downward and inward through the entire crown (Fig. 2). The leaves first become dull or pale green, curl upward, and usually become yellow to bronze from the apex and the margins of the blade inward, before falling from the tree. They may fall at any stage of symptom development and the base of the petiole characteristically is darkened in color. Defoliation may be slight, the dead leaves remaining on the tree for some time, or nearly complete, in which case the trees are conspicuous because of the scarcity of foliage. In some cases, as the original set of leaves dies, sucker growth in the form of dense clusters of large succulent leaves form on the trunk and larger branches. This new growth, however, soon withers and dies. Oaks of the red and black group usually die the same season they become infected, often within a few weeks after initial symptoms appear. When infection occurs late in the growing season, however, the diseased tree may survive the winter. The following spring sparse and dwarfed foliage develops that soon shows typical wilt symptoms. The bark of wilt-killed trees loosens rather rapidly and, by the end of the second year following death, may begin to shed from the bole (Fig. 2). In white and bur oaks the leaf symptoms are often much more localized. Usually the entire tree does not wilt at once, although bur oaks have been reported to lose all their leaves and die in a single season. Individual branches in any part of the crown may develop leaf symptoms, while leaves on the unaffected parts of the

Please mention TREES when writing Advertisers.

tree remain green. The affected leaves may be light tan, or dark green and somewhat water-soaked in appearance. They tend to remain on the affected branches after they die. The killing of individual branches over a period of several years results in "stagheading" and possible eventual death of the tree.

A brown to black discoloration in the outer sapwood just beneath the bark is often present in twigs and branches of trees infected with oak wilt. This can be seen by peeling back the bark and appears as a diffuse brownish discoloration or as longitudinal streaks. In cross section it appears as a brown ring or circle of dark-colored spots in the outer sapwood (Fig. 3).

These symptoms are sufficiently distinctive so that a diagnosis can usually be made in the field. However, for accurate identification of oak wilt, particularly in areas in which the disease has not previously been known, isolation of the casual fungus from diseased specimens is advisable. Several twig or branch samples, 4 to 6 inches long and up to one inch in diameter, taken from several parts of the crown of an oak wilt suspect, are needed for laboratory diagnosis. These should be collected from actively wilting branches and handled so as to arrive at the laboratory in a fresh condition. These should be sent to your State Agricultural Experiment Station along with information relative to the location of the tree and the name of the sender.

All species of oak thus far subjected to infection, either under natural conditions or by artificial inoculation, have proved susceptible to oak wilt. The Chinese chestnut has also been found to be susceptible under natural conditions. That interspecies transfer of the fungus from oak to Chinese chestnut may occur in nature is suggested by inoculation studies, which have shown that isolates of *Chalara quercina* from wilt-infected oaks will cause infection in chestnut. Whether the oak wilt disease may also be transmitted from oak to other hardwood species, or vice versa, is not yet known, but the occurrence of the disease in Chinese chestnuts suggests that this is a definite possibility.

That long-distance "jumps" occur in the spread of oak wilt is widely recognized. A survey by aerial reconnaissance in the Ozarks region of southern Missouri and Arkansas during the summer of 1950 revealed that such "jumps" apparently may occur over distances of many miles. Oak-wilt-infected trees are readily spotted from low flying planes. The light brown to bronze color and the thinness of foliage characteristic of diseased trees contrasts markedly with the midseason green of healthy oaks and it is possible to pick out wilted trees in the understory as well as diseased trees in the upper canopy in heavily forested areas. The disease was found to be generally prevalent but scattered in southeastern Missouri. Many instances were found in which an actively wilting tree, usually a dominant or codominant in the stand, was located in otherwise healthy areas at a distance far removed from any other known infection. The frequency of the disease diminished rapidly, infected trees became rare and the distances between infections became greater as the survey progressed southward into Arkansas. The means by which this long-distance spread is accomplished is yet unsolved. The observation that new infections commonly appear on a dominant or codominant individual strongly suggests that some agent in the process of its flight or migration is attracted to

(Continued on Page 16)

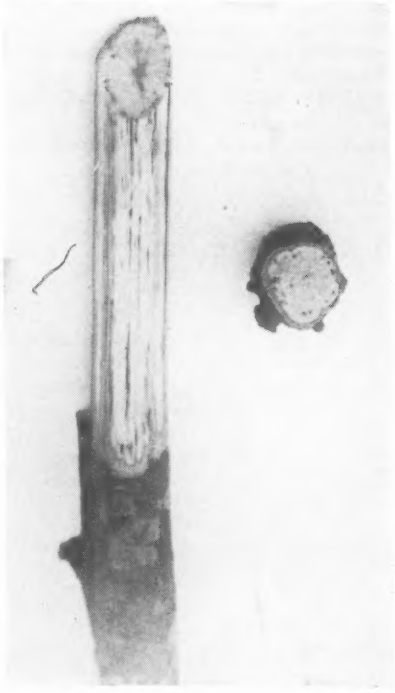

Fig. 2—above—Black oak showing early oak wilt symptoms. Note that wilting occurs throughout crown, beginning at top and at ends of lateral branches. Dead oak on the right shows sloughing of bark characteristic of oak wilt killed trees.—Fig. 3—left—Sapwood discoloration which is often present in twigs and branches of oak wilt infected trees.

Ovotran Wettable a New Miticide for Shade Trees

By F. W. FLETCHER
Dow Chemical Co.
Midland, Mich.

With the advent of the chlorinated hydrocarbon insecticides, particularly DDT, the all-important mite problem on woody plants has been greatly accentuated. It is generally explained that DDT kills the natural enemies of the mites, while it is itself not toxic to these plant pests. This condition allows the mites to develop unhindered and at a much faster rate than would be otherwise expected. This naturally has created a lot of interest, as well as a demand for an effective miticide.

Last year Matthysse (13) from Cornell University reported the results of his research with miticides for the control of mites attacking woody plants. Among the various materials studied was K-6451 which is p-chlorophenyl p-chlorobenzene sulfonate. This material proved to be one of the best acaricides tested. Other workers such as Armstrong (1) (2), Blauvelt, et al. (3), Borden, et. al. (4) Chapman, et. al. (5), Dean (6), English, et. al. (7), Garman (8), Holley (9), Jeppson, et. al. (10), Kenega, et. al. (11) (12), Smith, et. al. (14) and anonymous (15), have confirmed the miticidal effectiveness of K-6451.

Like all miticides K-6451 has many advantages as well as some disadvantages. Among the advantages of this miticide is its long residual action, a very important consideration in connection with the control of mites on shade trees. This chemical can be considered to be a general miticide since it controls a very large number of species of mites and it is particularly effective against the eggs and young mites. K-6451 is compatible with the insecticides and fungicides commonly used on shade trees, and is not affected by alkaline materials. It is also very low in toxicity to warm blooded animals, thereby being a relatively safe material to handle. By way of comparison, K-6451 on the basis of acute oral toxicity is only about one-eighth as toxic as DDT; on a chronic basis the difference in favor of K-6451 is even greater. This miticide also has the advantage of not being toxic to the natural enemies of mites. Thus, chemical control of mites with K-6451 can assist the natural biological control. Conservationists should be interested in this material because of its low toxicity to wild life.

In general, K-6451 is relatively safe on the foliage of most of the common shade trees and ornamental shrubs. Many varieties of shade trees have been sprayed with no apparent injury such as ash, aspen, basswood, birches, cherry, cedars, elm, hazelnut, hemlock, hickory, maples, oaks, pines, spruces and willows. Other woody plants such as azaleas, grape, privet, sumac and viburnum have also been treated with safety. There has, however, been some foliage injury and/or leaf drop with certain woody plants such as annual balsam, barberry, boxwood, and certain varieties of roses. Little injury will be encountered if the spray applications are made after the new foliage is hardened off in the spring.

On the other hand, K-6451 has the disadvantage of having a slow miticidal action often requiring several days to effect noticeable control. This is due to the fact that it is not particularly effective for controlling adult mites. However, once the mites have been suppressed its long residual and ovicidal action prevents their build-up for long periods, often for as long as two months. This slow initial action and relative ineffectiveness against adult mites, suggests early application before the build-up of heavy mite populations. This chemical also has very little or no insecticidal properties.

K-6451 will be available commercially in limited quantities this year under the trademark name of Ovotran Wettable, which is a wettable powder containing 50% p-chlorophenyl p-chlorobenzenesulfonate. It will be generally recommended for use as a miticidal spray on woody plants at the rate of from one to two pounds per 100 gallons of spray. It can be used either alone or in combination with insecticides and fungicides. Early application is suggested in order to suppress the mites before their build-up, and before too much damage has occurred. The lower dosage is suggested when there may be question with regard to possible phytotoxicity and the high dosage is suggested when long residual action is desired. The low dosage may require several applications at 3 to 4 week intervals.

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Please Mention TREES When Writing Advertisers

Ohio Passes Arbor Day Bill

By EDWARD H. SCANLON
National Chairman
National Arbor Day Committee

After three futile attempts, in past sessions, the current Ohio legislature passed the National Arbor Day bill proclaiming the "Last Friday in April" as Arbor Day, on May 25th.

Ohio thus becomes the eleventh state to legalize the "Last Friday in April" as Arbor day. Earlier this year Wisconsin became the tenth state on the honor roll. The other states that have established the National Arbor Day date are: Massachusetts, Maine, Connecticut, Rhode Island, New Jersey, Illinois, Indiana, South Dakota and Nevada.

The Ohio bill, S. B. 134, was presented in the Senate by Senators Joseph R. Nutt Jr., and Elizabeth Gorman where it passed on May 9. In the House the bill was sponsored by Representative Kenneth W. Thornton. It passed the lower house on May 25th. Active in soliciting support for this important measure—important to all the people—was Mr. Walter L. Flory, prominent Cleveland civic leader and conservationist. Mr. Flory left no stone unturned to assure passage of this bill and his untiring efforts resulted in success. Ken Thornton and Joe Nutt gave much of their time to the passage of S. B. 134. Strangely enough a bill of this character, receives little attention from all legislators, except its sponsors, and they must continually press to bring it up for hearings and then for a vote. Diligence is required in the passage of an Arbor Day bill, and grateful thanks go out to these busy men who had the vision to realize the value, to future generations of Ohioans, of tying Ohio in with the other states that have seen the wisdom in a unified observance of Arbor Day.

Plans are now under way to set up new committees in at least fifteen states to present Arbor Day bills at the sessions to be held in 1952 and 1953. Should at least ten of these states establish the "Last Friday in April" as Arbor Day a committee of outstanding scientists, arborists and nurserymen will be organized to compile a comprehensive record of data upon which trees can be used on the basis of the use for which they are best qualified. This will be the climax in the effort to make Arbor Day mean more than merely the sentimental planting of trees regardless of whether they serve a useful purpose or not. In the past no scientific evaluation was given to the purpose for which the tree was being planted. Millions of expensive mistakes have been made.

Again the committee wishes to thank Walter Flory, Joseph Nutt Jr., Elizabeth Gorman and Ken Thornton.

ARBOR DAY PROCLAMATION BY GOV. HENRY CABOT LODGE Jr. OF CONNECTICUT

"The tide of spring, strong and ancient, now floods our valleys and laps against our hillslopes, warming the land into life afresh and renewing for all our senses the wonder of leaf and blossom.

"Serenely indifferent to man and his self-made woes and hazards, the season returns with the careening earth to remind us, if we will but hearken, of the glory and the goodness of life.

Now is the time of the robing of the trees whose branches, beautiful in all weathers, are dressed anew for our solace and delight. The great-thewed oak, the gracious apple, the pillared poplar, the thrifty ash and hickory, the storied beech and the elm in its precious lacery; these and all the host of wayside, field and woodland, give us green welcome.

"So that we may be helped to fresh understanding of the beauty and the value of our shrubs and trees, and acting in accordance with our early law of custom, I hereby designate Friday, April 27, to be

ARBOR DAY

and urge that this day be observed in our schools, and that our people, by the planting of new growth, and by the fostering of old, preserve and increase this heritage of natural treasure for our own enrichment and for the use and enjoyment of those whose steps shall follow ours."

National Arbor Day Honor Roll

OHIO; WISCONSIN; Rhode Island; New Jersey; Connecticut; Massachusetts; Maine; Indiana; Illinois; South Dakota; Nevada.

Senator Joseph R. Nutt Jr.

Mr. Walter L. Flory

Representative Kenneth W. Thornton

PLANT AMERICA

Western Conference In Oregon

For the first time since its birth in 1934 at Santa Monica, California the Western Shade Tree Conference will leave the Golden State for its annual meeting. The eighteenth consecutive meeting will be held at Portland, Oregon, June 27-30. The Old Heathman Hotel will be headquarters.

Allan Reid and George Hood have been engineering the program and general local arrangements and report that everything is set for a very fine meeting. A much looked forward to feature will be the dinner Friday evening at Timberline Lodge; this spot is reputed to be almost literally out of this world.

Flying in from the east to participate in the program will be Charles F. Irish, Cleveland arborist and past president of the National Shade Tree Conference, who will speak on "My Impressions of Arboricultural Advancements." Accompanying Mr. Irish will be Ed Scanlon who as City Forester of Santa Monica, Calif., in 1934 founded the Western Conference. Ed, now Commissioner of Shade Trees at Cleveland, Ohio, and Editor of TREES Magazine, will speak on "Functional Planning of Trees on City Streets." The talk will be illustrated with the new third dimensional slides. The program follows:

Program
Eighteenth Western Shade Tree Conference

WEDNESDAY, JUNE 27, 1951

9:00 a. m. to 11:00 a. m.
Registration
Mezzanine, Old Heathman Hotel
Continuous Exhibit of Equipment on the Mezzanine

11:00 a. m. to 12:00 Noon
Informal meeting, introduction and announcements
Preliminary Committee releases and appointments

12:00 Noon—LUNCHEON ROOM, OLD HEATMAN HOTEL
Member and Guest fellowship
Call to Order by President Riley Stevens
Address of Welcome—Hon. Dorothy Lee, Mayor of Portland
Response—Lynn Harriss, Vice-President for Northern California
Response—Walter Barrows, Vice-President for Southern California
Program Outline by Allan N. Reid, Program Chairman

2:00 p. m.—CONFERENCE PANEL: PLANT USAGE. MODERATOR: Donald J. Martel
For Highways—Mark Astrup, Landscape Engineer, Oregon State Highway Commission
Forests and Greenbelt — Theodore F. Munger
Park and Recreation Areas—Fred Cuthbert, Landscape Architecture, University of Oregon
In Subdivisions and Business Areas—Walter Gerke, Landscape Architect
On School Grounds — Donald Martel, Landscape Architecture, Oregon State College

DISCUSSION

2:00 p. m.—LADIES
Shopping and Outing

6:30 p. m.—DINNER
Riverside Country Club—Members and Guests
Speaker: Maunsell Van Renssalaer, Director Saratoga Experimental Garden
"Role of the Arborist in Intelligent Community Planning."

8:00 p. m.—STANDARDS AND CERTIFICATION IN ARBORICULTURE
Committee Report: C. F. Holderness, Western Chapter Committee Chairman

9:15 p. m.—Dancing and Western Fellowship

THURSDAY, JUNE 28, 1951

8:00 a. m.—BREAKFAST—NEW HEATHMAN HOTEL COFFEE SHOP

9:30 a. m.—Room—OLD HEATHMAN HOTEL
REGULATORY CONTROLS — Walter Barrows, Chairman, Committee on Legislation, Park Superintendent, Whittier, California

9:45 a. m.—CONFERENCE PANEL: LINE CLEARANCE
Panel of Speakers from different Western Areas led by C. F. Holderness, W. S. Rowland Tree Company, Los Angeles

10:45 a. m.—DISCUSSION AND RECESS

11:00 a. m.—PANEL DISCUSSION: ARBORETA
Panel of Speakers and discussion on Arboreta Development in the West led by Maunsell Van Rensselaer, Chairman Arboreta Committee, Brian O. Mulligan and Ernest E. Fischer

12:00 Noon—LUNCH—OLD HEATHMAN HOTEL

1:00 p. m.—SKYLINE TREK TO COUNCIL CREST

1:00 p. m.—EXHIBIT OF MOBILE EQUIPMENT IN ACTION

3:15 p. m.—TREK CONTINUED INTO HOYT ARBORETUM
Assembly in the Arboretum and discussion of design and management by Ernest E. Fischer, Curator

4:15 p.m.—TREK CONTINUED TROUGH WASHINGTON PARK AND PORTLAND ROSE GARDEN

6:30 p. m.—DINNER—OLD HEATHMAN HOTEL—Members and Guests
Speaker: Edward H. Scanlon, Commissioner, Div. of Shade Trees, Cleveland, Ohio, "Functional Planning of Trees on City Streets," a showing of third dimensional slides.

8:30 p. m.—BUSINESS MEETING
Report of President Riley Stevens
Report of Executive Committeeman, Region 6—Roger Sohner
Report of Nominating Committee
Report on Committee on revision of Park Administrator's Tree Selection List
Report of Committee on Arbor Day

8:30 p. m.—LADIES GET-TOGETHER

FRIDAY, JUNE 29, 1951

8:30 a. m.—BREAKFAST
New Heathman Coffee Shop

9:30 a. m.—ROOM — OLD HEATHMAN HOTEL
SHADE TREE CLINIC. Moderator, Pierre S. Miller, Professor of Plant Pathology, U.C.L.A.

9:35 a. m.—Practical Tree Diagnosis—Leslie Mayne, San Mateo, California

9:55 a. m.—Spray Programs for Insects—Robert W. Every, Extension Entomologist, Oregon State College

10:15 a. m.—Spray Programs for Diseases, A. P. Steenland, Plant Pathologist, Oregon State College

10:35 a. m.—Discussion and Recess

10:50 a. m.—Malpractices in Pruning and Planting—Keith Davey, Davey Tree Company, San Francisco

11:10 a. m.—Soil Aeration and Compaction in Tree Growth

11:30 a. m.—Discussion and Questions from the floor

12:00 Noon—LUNCH — OLD HEATMAN HOTEL
Announcement of Trip Itinerary

1:00 p. m.—LEAVE FOR MT. HOOD AND A ROUGHING
Stops will be made to view timber types and native plants.

5:00 p. m.—DINNER AND VIEW FROM TIMBERLINE LODGE
Speaker: Leo A. Isaac, Silviculturist, U. S. Forest Service. "Silviculture We Practice."
INSTALLATION OF OFFICERS
"My Impressions of Arboricultural Advancement"—Charles F. Irish, Arborist and past president National Shade Tree Conference, Cleveland, Ohio.

SATURDAY, JUNE 30, 1951

9:00 a. m.—ROOM — OLD HEATHMAN HOTEL
"Nursery Production of Shade Trees in Northwest"

10:00 a. m.—A REVIEW OF STATE LICENSING FOR LANDSCAPE CONTRACTORS

10:30 a. m.—BUSINESS MEETING AND FINAL REPORT
Resolution on Standards and Certification in Arboriculture
Final Committee Reports and Resolutions

9:00 a. m. to 11:30 a. m.—LADIES — GARDEN TOUR

12:00 Noon—ADJOURNMENT

DON'T MISS
the 27th National Shade Tree Conference
CINCINNATI
AUG. 27-31

Some New Ideas for Stump Removal and Stump Loading

By Spencer H. Davis, Jr.
Associate Professor of Plant Pathology
Rutgers University,
New Brunswick, N. J.

At the Twenty-Fifth annual meeting of the New Jersey Federation of Shade Tree Commissions a paper was presented by the writer under the somewhat ignominous title of "Shade Tree Gimmicks." Some twenty or more arborists sent in descriptions, sketches, and photographs of their gimmicks which ran from tree-paint cans, soil-sampling tubes and pruning methods to stump removal, spray guns, and inter-communication systems between truck operator and sprayer operator. Incidentally, a gimmick, in the sense of this paper presented at the Atlantic City meeting, was any method, material, or technique which an arborist found to be successful which was not part of the usual tools-of-trade. A new technique for doing a standard job or a standard piece of equipment with a new use was considered a gimmick. Some of these ideas we consider worthy of presentation to all arborists who are readers of *Trees Magazine*.

Among the gimmicks for stump removal, the one which seemed most unique was that described and used by Dick Walter of Maplewood, N. J. After the tree is cut off to about the six-inch height by the conventional chain-saw method, Dick makes use of a drill to bore out the stump. Using any standard gasoline generator and a heavy duty electric drill he adds a 2" road-bit and goes merrily to work drilling a lot of holes as close together as possible in the top of the stump. By the time he is through with the drill, the top of the stump looks very much like the open end of a large honey-comb, with each cell extending down three to five inches below the soil line (or as deep as he can drill without hitting soil). After the stump has been completely honey-combed, it is a simple task to knock out the "comb" with a Forest or "Pulasky" ax to the depth of the drill-holes. As Dick puts its, "It's easy to work-out a two to three-foot diameter stump, sweep up the chips, throwing on a covering of soil, scatter a handful of grass seed, and be out of there in a couple of hours."

Vic Brydon of Rutherford, N. J., is a proponent of the jack hammer for the stump removal job. However, he uses a 45-lb. hammer with either a scoop-chisel or clay-spade rather than the conventional chisel on the heavier air hammer. Vic has used this lighter hammer for a number of years and feels he can chip out a stump about as fast as a man with the usual chisel and heavier hammer.

Phil Alden, our permanent secretary of the N. J. Federation and the work horse of all the conventions, is even

(Continued on Page 18)

This illustration shows the stump-loading "gimmick" as conceived by Jack Kenealy, Tree Warden of Ardmore, Pa.

Henry Vaughn Eames of Plainfield, N. J., describes his "gimmick" for loading trees, logs or stumps.

NAA NEWS

By PAUL E. TILFORD, *Secretary*
Box 426, Wooster, Ohio

Costs and Charges

In a survey made last August by the National Arborist Association it was found that the average hourly charge for private tree work at that time was $2.52 per man hour. If a survey were made now a higher average charge would be reported, since many arborists raised their rate at the first of the year. Even with the increased rate, owners of tree service companies are not making as much profit in terms of dollar values as they did years ago. In fact many are not making as much net profit as they once did. Several factors have contributed to this situation but generally it is a case of higher costs of operation without a proportional increase in the price received for the work.

Some years ago it was commonly said that, if a tree service company could receive an hourly charge for its services equal to double its labor rate, it would make a fair profit. Most tree companies doing private work today find that charging double their average labor rate does not yield much profit. Even though labor rates are much higher, they have not advanced generally in the tree service field in proportion to the higher operation and overhead costs. Then, too, some additional costs, such as Old Age Benefit, Unemployment Insurance, and higher Workmen's Compensation and Liability have been added.

A National Arborist Association committee on Cost Analysis and Accounting, of which Albert W. Meserve, Danbury, Connecticut, is chairman, has made some study of the costs of doing private tree work. For a company employing 12 to 16 men it was found that Pure Labor Rate (i.e. the average hourly rate of pay not including payroll taxes) was about 55.5 per cent of the hourly cost of doing business in the year 1949. The remaining 44.5 per cent consisted of selling, operating, office, depreciation, supplies, taxes, insurance, and other expenses. The cost of materials which were sold to customers was not included; likewise no profit or salary for the owner was included. Supposing $1.30 per hour was the average labor rate and letting this equal 55.5 per cent of the total cost we find the total hourly cost of doing business was $2.32 without any salary or profit for the owner.

Now suppose the owner of the business expects a salary or income of $100 a week to live on. He could make that or more if he were engaged in many trades. One hundred dollars per week, $5200 per year, will add another 20 cents per hour on the above costs, if the average chargeable hours should be 26,000 per year (26,000 hours per year would be 40 hours per week for 12.5 men for 52 weeks). That would bring the hourly cost of doing business up to $2.52 per hour. Surely the owner and manager of the business is entitled to some profit to reward him for the risks and headaches of being in business. In case he should want his hourly rate of charge to include a profit equivalent to 10 per cent the selling price would be $2.80 per man hour.

By now, dear reader, I may have you completely confused and you probably are repeating to yourself that old saw, which goes "Figures don't lie, but liars figure." What I hope is, that enough has been said to needle you into doing some figuring for yourself. Take all of your expenses connected with the operation of your tree service business last year, excluding the cost of materials which were purchased for resale to your customers and the cost of purchased equipment which went on your capital account. Divide this total expense by the total number of hours you charged to your customers. This will give you your hourly cost of doing business last year. And remember that unless your business is incorporated and pays you a salary, this hourly cost will include no profit or income for you. That will have to be added on, unless you are independently wealthy and are just running your business for fun.

Labor and some other costs have advanced since 1949, which was the base for the preceding discussion. It is not too difficult to understand why a rate of charge of near $3.00 or more per man hour is necessary to operate on a profitable basis in some localities. Likewise in some communities where labor rates are lower, the hourly charge can be lower.

Just one more point to make clear. All of this discussion relates to private tree work and not line clearance. Because of several reasons, which I will not go into, line clearance on a volume basis can be done at a lower figure than private work. This statement does not mean that the price received for line clearance is right. In most instances it is too low for quality work.

* * * *

Ed Scanlon, the modest editor of Trees Magazine, may forget to tell you that Kiwanis Magazine, May 15, published an article entitled "The New Trend in Trees" under his name. It is a nicely written and well illustrated article. Congratulations to Ed.

YOUR LAWN

Your Lawn by Geoffrey Cornish of the University of Massachusetts, with illustrations by Carol Burr Gawthrop, is on sale at newsstands throughout the United States. It is published by Authentic Publishing Company, Inc., 145 West 57th Street, New Yosk 19, New York.

Dealing with maintenance of established lawns and construction of new ones, it points out that energy, time, and money are frequently thrown away on practices that are wasteful and even injurious to lawns. It is profusely illustrated with sketches, and much of the story is told by these and accompanying captions. The author has constructed and maintained golf courses in the United States, Canada, and the West Indies. He is at present Assistant in Agrostology at the University of Massachusetts.

Complete information is given on lawn practices including mowing, fertilizing, weed and insect control, growing turf in shade, purchasing of lawn seed, and a host of other subjects. Material applicable to all parts of the United States is presented. The retail price of *Your Lawn* is fifty cents. The publishers make a very attractive discount to dealers. The book promises to be a very fast moving item when sold by seedsmen, equipment dealers, professional golfers, florists, nurserymen and garden supply houses.

Our K-24 will cut fast in large limbs or small – and we mean fast.

Try One with a Scabbard to Fit

KARL KUEMMERLING, INC.

401 Cherry Ave. N.E.
Canton 2, Ohio

—Along The *Buy*-Way—

New Power Saw Carrier Designed for Safety

Safety to the operator is the outstanding feature of the new Aerial Power Saw Carrier, now being manufactured by the LeRoy Machine Company, Inc., LeRoy, N. Y. The inventor, Mr. Arnold Woleslagle, a treeman of some eighteen years experience, spent many years on its development and bringing it to perfection through actual tests, prior to its present introduction to the trade.

It was demonstrated to Mr. Karl Kuemmerling at the National Shade

Tree Conference last August in Syracuse, New York. At this conference it was received very enthusiastically.

The Aerial Power Saw Carrier provides a means of hoisting the saw as well as safely supporting its weight while in use. Whether the operator is aloft a tree or standing on the ground, he works entirely independent of the saw. He may let go of it while he changes position and it hangs free until he is ready for another cut. When cutting, he has only to guide the saw. He can adjust its height in an instant without even stopping his cut. It speeds tree trimming, topping or completely taking down a tree and is easily handled by one man.

The Carrier consists of a steel plate with sharp-pointed prongs that grip into the tree; a crane arm to hold the Carrier away from the tree and permit it to swing through a wide arc; a tension spring attached between end of crane arm and pulley through which the hoisting rope is reeved; a clamp to attach hoist to saw and another hand-operated clamp attached to hoisting rope to hold and adjust position of saw. A flexible cable passing through center of the spring provides an extra safety feature in case of breaking of spring. The Carrier is equally adaptable to either gas or electrically operated saw.

NEW MALL ACCESSORIES

Saws and gals can be pals—when the saw is light and easy to use. Shown is the Mall "Wood Nymph" and "Lumberjill" on a felling job. They're using a Mall Model 11 gasoline engine chain saw with a 24-inch cutting bar. These two young ladies are appearing at timber cutting and forestry shows throughout the country—as part of the Mall Tool Company's new demonstration program—showing the lightweight handling ease and cutting speed of all 26 models of Mall gasoline engine, electric and pneumatic timber chain saws. For further information about these saws, write Mall Tool Company, 7725 South Chicago Avenue, Chicago 19, Illinois.

Growth Inhibitor Used on Hedge

Much of the work necessary to keep a clipped hedge in presentable condition may be eliminated in the not-too-distant future by use of a chemical growth inhibitor, *maleic hydrazide*. Scientists at the University of California treated a hedge of *Pyracantha crenulata,* a species of Firethorn, with this material and succeeded in greatly reducing the growth rate. They applied an aqueous solution containing 0.5 per cent of maleic hydrazide at the rate of ½ to 1 fluid ounce per square foot. Two months after application, untreated sections of the hedge had an average of 42.4 new growth shoots per square foot, while the treated section average only 1.3 shoots per square foot. Moreover, the shoots in the untreated section were 9 to 12 inches in length, while those in the sprayed section were but 1½ to 2½ inches long. No apparent injury to the foliage or berries resulted from the treatment. Work with this material for this purpose is still very much in the experimental stage, so you'll need your hedge clippers for another season or two, at least.

—Shade Tree Digest.

FOR SALE — Lawrence Aero-Mist Sprayer, 1948 model, 47 gallon tank, Novo water cooled engine, 3600 r.p.m., used only two seasons, reasonably priced. Muncie Tree Surgery Company, P. O. Box 1068, Muncie, Indiana.

Arboricultural Field Day

The Arborist's Association, The Certified Tree Experts, and The New Jersey Federation of Shade ree Commissions present:

Arboricultural Field Day
Wednesday, June 27, 1951
Rutgers University,
New Brunswick, N. J.

9:00—"Registration at the Log Cabin"
9:30—"Conducted Tours of Shrub Garden and Holly Arboretum" Dr. C. H. Connors and Prof. R. B. Clark
10:45—"Conducted Tour of Commercial Demonstrations and Exhibits." What is new in the field of sprays, sprayers, saws, fertilizers, pruners, etc.
12:30—"Lunch at the Log Cabin" Same excellent caterer as last two years.
1:30—"What Soil Aeration Can Do For Our Plants" Tom and Tony Mascaro (with demonstration of Aerifier).
2:00—"Demonstration of Gimmicks" New ways to handle old problems. Worth the price of admission itself.
3:30—"Contests and worthwhile Prizes"
(1) Rope Throw
(2) Log Chopping
(3) Tree Climbing(winner to be sent to Cincinnati, Ohio as New Jersey representative in climbing contest of National Shade Tree Conference).

Contestant in a Tree Climbing Contest edging toward one of the points of contact in the race against time. This will be a familiar scene in the National Tree Climbing Contest to be held in Cincinnati during the 27th National Shade Tree Conference, August 27-31.

A Tree By Any Other Name Can Be Sweet Locust

What's in a name is enough to drive tree doctors daffy, if they'd let it. A given common name for a tree may apply to several entirely different species. Almost every fairly common tree has many names. In different parts of the country, nomenclature is so varied even experts are apt to be up a tree.

Actually, proper identification is extremely important in diagnosis and treatment of arboreal ills. Martin L. Davey, Jr., who heads the Davey tree experts, says field men are required to give scientific names in operational reports to headquarters. Otherwise, treatment desirable for a tree in one section might turn out to be disastrous in another.

This probably sounds confusing. And it is! Consider the black locust, white locust, locust and acacia. Often, it is confused with, another species, honeylocust (Gleditsia triacanthus), also called sweet locust, thorn tree or thorned acacia. In the Northern states and Canada where it is native, arborvitae (Thuja occidentalis) is referred to as white cedar, or merely cedar. Tennessee folk mean red cedar, more properly red juniper, when they talk of cedar. The word cedar is a misnomer in both cases. Neither are cedars.

The tuliptree (Liriodendron tulipfera), often termed the tulip poplar, is in no way related to poplar, but is close kin to the magnolia. Whitewood, a name occasionally given the tuliptree, is frequently applied to the cucumbertree, alias mountain magnolia.

Since there sometimes is disagreement even on scientific names, the American Joint Committee of Horticultural Nomenclature is the recognized supreme court on such matters. It publishes its decisions in a 675-page volume called *Standardized Plant Names.*

27th
National
Shade Tree
Conference
Cincinnati, Ohio
Aug. 27-31

PLANT AMERICA

Courtesy Division of Shade Trees, Cleveland.

BUY TWO
get the effectiveness
OF THREE

Pennsalt DDT Emulsion Concentrate "34" **has many important advantages for the arborist. Here are a few:**

- **One-third less material to handle and store.**
- **Less solvent used per pound of DDT.**
- **Less run-off or drip of active ingredients.**

Why handle three drums of low DDT-content emulsion concentrate when two drums of Pennsalt "34" will give you effective coverage . . . with one-third less solvent?

Careful compounding holds three pounds of DDT in one gallon of solvent. When water is added to make the desired spray strength, a fast-breaking emulsion is formed. This means that more of the active ingredients stay where they belong, with little run-off or drip. Result: Greater effective coverage—whether you use mist concentrate or hydraulic equipment.

In addition, of course, with Pennsalt "34" you have one-third less material to handle and store . . . less solvent on the trees and many other advantages. Arborists everywhere are learning about the convenience, economy and relative safety offered by Pennsalt DDT Emulsion Concentrate "34". This season *"Spray the Pennsalt Way."*

For specific information call or write your nearest supplier, or write directly to:

Agricultural Chemicals Department

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Oak Wilt

(Continued from Page 7)

such trees and is responsible for spreading the fungus that causes the disease. There is little to suggest that the fungus is disseminated by wind. Once initial infection has occurred, a progressive, tree-to-tree spread of the disease occurs in a localized area. It has been conclusively demonstrated by investigators at the University of Wisconsin that this tree-to-tree movement of the disease is the result of passage by the fungus from diseased to healthy individuals through natural root grafts. This movement from diseased to adjacent healthy trees generally occurs in a somewhat radial manner from the initially infected individual. Progress of the disease in this manner is slow. Such natural root grafting is common in the red and black oaks, but grafts from bur-to-bur or white-to-white oaks have been found only occasionally. Also, in the many experimental plots in which this phenomenon has been studied in Wisconsin, only one case has been discovered in which a graft has occurred between different species, in this instance between a bur and a jack oak. This apparent infrequency of root grafting between species no doubt explains in part, at least, the survival of bur and white oaks in wilt areas in which the population of red and black oaks has been largely wiped out.

As a result of the discovery that extensive natural root grafts exist between oaks of the same species and that the passage of the oak wilt fungus occurs through such grafts, local control of the disease has been accomplished in certain Wisconsin areas. Immediate removal of each wilting tree has retarded the disease in 11 out of 18 eradication plots. Where single, newly-wilting trees were poisoned, no spread occurred in six plots observed for one year or in three plots observed for two years. Poisoning healthy trees bordering wilted areas has prevented further local spread in 12 plots, six of which have been under observation for four years. This method of control would appear to be of greatest value in woodland areas where individual trees are of relatively low value. A method more suited to lawn and park areas where individual trees are of very great value would be the severing of all root connections by mechanical means. In ten plots, trenching between wilting and healthy trees has prevented further spread of the disease for two years. Because wilt symptoms on bur and white oaks are often limited to a few isolated branches, it has been reported that rigorous pruning of all wilting branches has prolonged the life of an occasional tree. While the dependability of this method remains to be determined, it should be recognized that infected branches on bur and white oaks are possible sources of infection and should, therefore, be removed as a precautionary measure. These results give promise of some measure of control of the disease in local situations. Any delay in their application, however, such as postponing until winter, greatly reduces the chances of success. Until the agent or agents responsible for the spread of oak wilt over distances greater than those accountable to root grafts are discovered, such methods are the only known means of retarding its spread.

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PORTER CUTTERS PORTER PRUNERS

Porter-Ferguson Hydro-Method for Auto Body Repairs

The Persimmon

Late autumn, in southern Illinois and Indiana, is when the persimmon trees hang heavy with luscious fruit ready for picking: soft and squashy—dead ripe. Then we not only eat them raw but we have those rare treats: persimmon pudding, persimmon pie, and upside-down cake covered with this fruit which has such sweet juicy flesh and such unique flavor. Then the women folks make persimmon jelly and a sirup thick as molasses. Some still make "simmon beer." Then the racoons, foxes, squirrels, skunks, wild turkeys and bobwhite quail all have a feast. Then the possums get fat and sassy.

This fruit is something like a big round plum, with four broad brown woody bracts at the base where it is attached to the twig by a short thick stem. It varies from one to two inches or more in diameter, depending upon the tree and the locality. As it ripens, it turns from green to orange with a purplish sheen and, finally, to a mellow orange-red. Contrary to popular belief, it is not true that persimmons will not ripen until after a hard frost. A favorite trick played upon an unsuspecting city boy is to get him to eat a not-quite-ripe persimmon, whereupon his lips, gums and tongue pucker up until he cannot spit or talk. This astringent quality, due to tannin, disappears in the fully ripened fruit.

The yellowish-brown flesh encloses several large flattened seeds, brown and hard, which the southern Indians used to grind into meal, and which the pioneers roasted as a substitute for coffee.

The persimmon is native, tho rare, as far north as central Illinois, southeastern Iowa, and southern Connecticut on the Atlantic coast. It is most abundant farther south. It attains greatest size in the Mississippi Basin and there are records of persimmon trees in

the bottomland forests of the Wabash valley which were more than 100 feet tall and two feet in diameter. Ordinarily, however, it does not exceed 25 or 30 feet in height and a foot in diameter. It commonly occurs with other trees, as in oak and hickory woodlands but, along with sassafras and sumac, young persimmons will "take over" worn-out eroded abandoned fields in southern Illinois and Indiana.

The mature trees have thick dark-gray bark deeply divided into small square plates. The leaves are broad and pointed, with smooth edges; from four to six inches long and about half as wide; dark green and leathery on top, pale green below. The small greenish male and female flowers are borne on separate trees. The thick sapwood is yellow but the heartwood is nearly black and, altho it rots quickly underground, is so dense, hard, heavy and strong that it is the preferred wood for mallets, shoe lasts, the heads of golf clubs, the butts of billiard cues, and the shuttles used in textile weaving.

The persimmon is a member of the Ebony family and is called "American Ebony." Most species of this family are native to Asia but there is one, the chapote, found in Mexico and from Texas to southern California. It is a small tree with black small fruit. A Japanese species was introduced into California in 1870 and many horticultural varieties have been developed from it. Their fruits, altho the flavor is not so exquisite as that of our native persimmon, are larger and can be shipped for commercial use. Because of its long taproot, the tree is extremely difficult to transplant but it is readily grown from seeds.

Lips that touch a green persimmon never shall touch mine.

—Forest Preserve Dist. of Cook Co., Ill.

■ *JOHNNY CREECH, U.S.D.A. horticulturist named SEVERAL SMALL TREES in his EXCELLENT PAPER at the 26th N.S.T.C. that WE LIKE VERY MUCH and ARE GROWING in quantity — ACER TRUNCATUM; ACER DAVIDI and ACER NIKOENSE — two other GOOD ACERS are MIYABEI and BUERGERIANUM.*

■ *A SPLENDID OPPORTUNITY to INITIATE A STATE-WIDE SHADE TREE PROGRAM is believed to be presented in the 12 MILES OF DIVIDED HIGHWAY recently dedicated in RHODE ISLAND. According to JOHN R. GRIFFITH, landscape architect for the DEPT. OF PUBLIC WORKS, this road runs near the shore in WESTERLY and CHARLESTOWN and is part of Route One. L.O.W. TAKE NOTICE.*

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SHELL VAPONA 1D-045 This oil mist insecticide is now a favorite for shade trees and ornamentals.

Shell Vapona 1D-045 is a refined horticultural base oil containing DDT and exceptionally low in aromatic hydrocarbons. It contains no inert ingredients . . . is applied undiluted as a concentrated mist from ground or aircraft atomizing equipment.

Both of these dependable Shell insecticides have a fine record for controlling gypsy and brown tail moths, tent caterpillars and other lepidoptera, sawflies, leaf beetles, the elm bark beetle (vector of Dutch elm disease) . . . and other pests for which local Extension Services recommend DDT.

See your local representative or write for further information.

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PLANT AND SPRAY THE IRON AGE WAY

New Ideas

(Continued from Page 11)

more conscious of the back and arm muscles of his Kearny, N. J., tree men. For stump removal his men are using a light riveting hammer (about 23 lb.) with a small chisel in contrast to the conventional 75 lb. air hammer with large chisel. Phil says, "So maybe it does take a few extra minutes on each stump with this light riveter's hammer, but the difference in the physical wear on and resultant mental attitude of the operators more than makes up the difference . . . also, the difference in cost of the hammers may appeal to some of the private operators who are working on a small capital."

Gasoline-powered drill "gimmick" as described by Richard Walter, Park Superintendent of Maplewood, N. J.

Jack Kenealy, our neighbor from Ardmore, Pa., who we are happy to say always attends our Jersey meetings, has a stump-loading gimmick which he has been using for years. Jack's remark when he sent in his suggestion was, "I think an expensive piece of equipment which is used a couple of times a year is not so much of a gimmick as is an inexpensive, home-made job which is used many times a year . . . I've been using this rig for a lot of years . . . that's why I think the loading plate and skids make a good gimmick." The loading plate is a single piece of sheet steel about eight foot square with a slight depression along the center-line into which the stump is more-or-less cradled while the plate and stump move up the skids. For each of the two skids he used two oak planks (12′ x 5½″ x 1¾″) separated by ten oak spacers (6″ x 5½″ x 2″). The thirteen steel "Bond" rollers (4 x 1½″) with removable ½″ diameter pins and twenty-six spacer washers were set in with centers spaced every 12 inches except for the three lower rollers which had centers spaced 6½″ apart. The forty-one frame bolts (6″ x ¼″) tied up the skid which then had a sheet steel shoe on the lower end and a pair of steel strips for hooking the skid to the rear of the truck.

After the skids are hooked onto the truck they are blocked-up loosely at about their mid-point. The stump is then rolled on the loading plate and a rope from the winch is looped around the stump. The rollers in the skids make the raising process a lot easier as the winch draws both plate and stump up on the truck.

Henry Vaughn Eames of Plainfield, N. J. describes another loading gimmick suitable for stump, log or tree loading. Henry places ordinary skid-planks on the *side* rather than the rear of the truck and the pull-ropes thrown from the tree or stump on one side, across the body of the truck and down to a crawler tractor or heavy truck on the other side. As the pulling truck moves away at right angles to the truck being loaded the stumps or trees are pulled up onto the stationary truck. Henry considers this to be a very rapid method of loading and also a method of loading more material on a truck. For very large trees, transplanted with a ball, the loading is very simple with a low-bed trailer.

Next issue we'll look at a few of the pruning, spraying, fertilizing, etc., gimmicks.

Pennsalt Issues Service Bulletin On Use of Lindane and DDT

A new service bulletin on how to use lindane and DDT in commercial pest control work has just been issued by the Pennsylvania Salt Manufacturing Company.

The bulletin gives in tabulated form complete instructions for mixing various quantities of finished solutions of 0.5% lindane or 5% DDT. Both insecticides control common household pests such as flies, mosquitoes, fleas, ants, clothes moths, etc., though lindane through its three-way action of contact, fumigation and stomach poisoning is recommended for control of roaches, silverfish and spiders as well, DDT is the "old reliable" of pest control work because of its versatility, and full instructions for mixing it for various uses are given in the bulletin.

A copy of the bulletin may be obtained by writing Agricultural Chemicals Department, Pennsalt Chemicals, 1000 Widener Building, Philadelphia 7, Pa.

POLES APART IN COST AND RESULTS

A spray rig can cover miles of right-of-way speedily and thoroughly.

Hand-cutting crew clearing a right-of-way.

MEN who watch costs have found that chemical weed control and hand-cutting methods are *poles apart* . . . in cost and performance. Dow Weed Killers, used by leading utility companies, have saved *25 to 50 per cent* over hand-cutting or other mechanical methods.

The Dow Chemical Company has developed weed, brush and grass killers that save you money in clearance and maintenance of your right-of-ways. Contact your nearest Dow sales office.

ESTERON BRUSH KILLER, a mixture of low volatility esters of 2,4-D and 2,4,5-T, now contains an acid equivalent of two pounds of 2,4-D plus two pounds of 2,4,5-T per gallon. This product controls woody and herbaceous plants including alder, ash, birch, brambles, cherry, elm, hickory, maple, oaks, osage orange, poison ivy, sumac, willow, and many other species. Assures satisfactory control of most troublesome species on the average right-of-way. Also effective for treating stubs and stumps to prevent resprouting.

ESTERON 245, a low volatility ester of 2,4,5-T with four pounds of 2,4,5-T acid equivalent per gallon. This product controls woody plants in the same manner as Esteron Brush Killer. It is particularly effective on 2,4-D resistant species such as brambles, hawthorn, mesquite, osage orange, palmetto and poison ivy. Also very effective for stump treatment and dormant bark application.

DOW SODIUM TCA 90% controls annual grasses and established perennial grasses including Johnson, quack and Bermuda. Does not present a fire hazard, neither is it poisonous to livestock grazing on treated foliage. Mixes readily with 2,4-D for weed as well as grass control in the same application. Stores well and is easy to handle. At low dosages, it can be used to retard growth without killing, where a light grass cover is desired.

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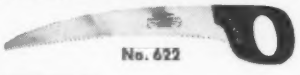

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Massachusetts Tree Wardens, Arborists and Utilities Conference

By Gordon S. King
University of Massachusetts, Amherst, Mass.

The Tree Wardens, Arborists, and Utilities Conference, March 25-30, 1951, was attended by one hundred and twenty-eight tree and utility men from Connecticut, Rhode Island, New Hampshire, Vermont, and Massachusetts.

This is the first year this program has operated on a conference basis. Since 1933, the University of Massachusetts held a five-day short course for Tree Wardens which laid the foundation for starting our present conference.

The Massachusetts Tree Wardens' and Foresters' Association, Massachusetts Arborists' Association, Electric Lines Club of New England, and the University of Massachusetts are behind the conference and have given excellent support. With the Electric Lines Club of New England taking an active part in the conference a friendly and intelligent relationship between the tree men and utilities exists.

Group photo of participants at March meeting of Massachusetts Tree Wardens and Arborists.

During the five-day program an attempt was made to devote half a day to tree laws and the registering of arborists, one day to private arborists' problems, a day to the utility companies, demonstrations of tree equipment and contests for tree climbers requiring another day, and the last day to the city foresters' problems. With this arrangement every group is taken into consideration.

Mr. Edward W. Higgins, President of the National Shade Tree Conference, and a member of the Massachusetts Arborists' Association, was to be the guest speaker at the banquet March 27. However, due to a sudden illness Mr. Higgins was unable to attend. Fifty-eight members came to the banquet, and a talk and colored slides on "Forestry and Life on a Rubber Plantation in Liberia, West Africa," was given.

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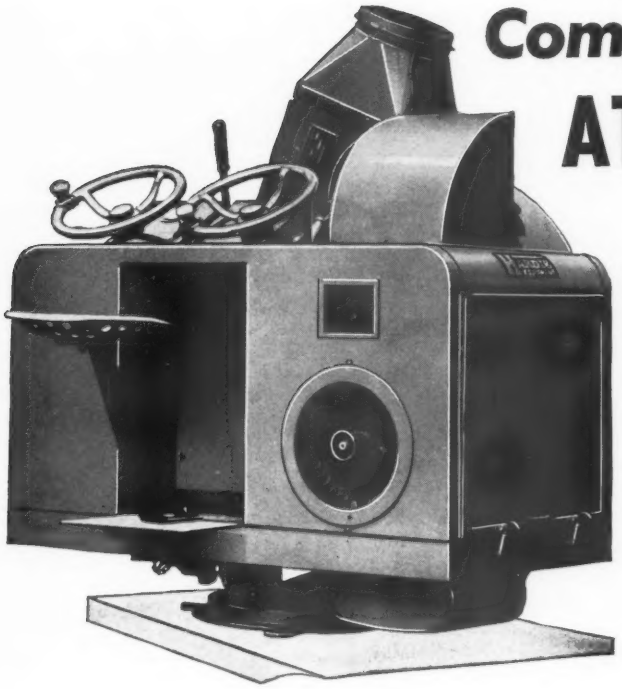

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Complete PERFORMANCE

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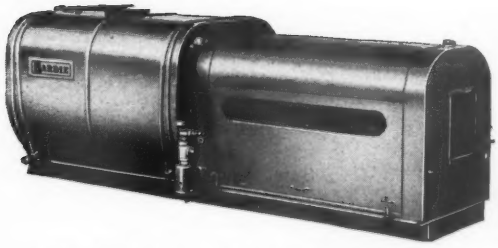
The high pressure so necessary to complete atomization of the concentrate is abundantly provided by the sturdy Hardie high pressure pump.

The blower, driven by a 31 H.P. engine puts the mist on the tree with 10,000 cubic feet of air per minute traveling at 135 miles per hour.

The operator can direct the fan housing at any point within a radius of 200 degrees. The entire unit rotates within 360 degrees on its turn table. All controls are right under the hand of the operator.

Let us tell you more about this amazing new air blast shade tree sprayer. Write for complete specification data.



The familiar and time-tested Hardie high pressure shade tree sprayers are available in any desired capacity and in standard and custom built models.

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HARDIE

PEST CONTROL EQUIPMENT

PLANT AMERICA

Street Trees and People

Dear Editor Ed:

During the recent big snow when I wasn't able to get out to my favorite bar I took an hour to consolidate some notes that had piled up through the years on the reasons why people have wanted trees cut down. It's probably an old story to you, but, there may be a new one or two.

Leaves: stop up gutters, rattle at night and keep her awake (Shingle Oak), make water in pool dark (Red Oak), block out street light, can't see down street to the corner, can't see the stop signs, can't see the traffic light, shut off the draft from the chimney, make house dark, make house damp, make her sneeze (Sycamore); Cavities: boys set fires, rats get in, squirrels make homes, owls use and "holler" at night (Screech), owls tried to carry away his dog (Small Dog (Large Owl) (Monkey Face), owls deposit ill smelling pellet (Monkey Face), Yellow Jackets make homes as do honey bees and hornets.

Bugs: crawl from tree to porches and on houses(mostly Tussock Moth and Elm Leaf Beetle), scare children, drop sticky stuff on autos (Aphis).

Roots: Pedestrians fall over, crowd out other plants, keep grass from growing, raise basement floors (Carolina Poplar and Silver Maple), destroy foundations (Carolina Poplar), raise sidewalks and curbs, stop sewers. (Any tree planted in wrong place, i.e. out-of-scale.)

Cigar like things litter street (Catalpa), things that look like worms fall (Carolina Poplar bloom) boys climb, children throw sticks at fruit (Buckeye, Horse Chestnut), birds congregate (Noise and promiscuous defication), squirrels carry walnuts and stop gutters, cat climbs and can't get him down, cotton flies over neighborhood (Carolina Poplar), sprouts come up all over the place (English Elm), fruit draws flies (Mulberry), yellow jackets, blow flies, honey bees, etc. congregate on bark (American Elm just dying with Phloem Necrosis), dead, split, makes noises (squeaks), blocks driveways, tears slate off roof, rots gutters, afraid it will fall on house, gets on fire (high tension wires), too close to house (burglar could get from tree to porch roof), too close together, too tall, too low, smells bad (Ailanthus), slip on fruit (Ginkgo) and he just don't like to rake the leaves. While we do not make a charge for any work we do yet it is obvious that we don't remove for all of the reasons noted above. As you have noted many of these requests are unreasonable but, in all fairness to the complainant, it has to be admitted, that many of the complaints are legitimate. Looking over Columbus it is my observation that not one in 10 trees now existing is the tree or even the type for the location. It's going to take a lot of cooperation among the arborists, the nurserymen and the people charged with the responsibility of city trees if the above situation is remedied in our towns all over these United States. The good work you do with "TREES" Magazine, with your personal appearance, the service you render to cities whereby you evaluate their needs at a cost far below what they could, in most cases, do it for themselves and your aggressive tree program in Cleveland gets my nod for meritorious service. I am very sure that as long as you are around, the subject of trees will never become blase.

Very truly yours,
Donald M. Smith,
Foreman Forestry,
City of Columbus, Ohio

Cut costs, save time, do better work. Use electrical tools on every job beyond the reach of highline power. With electric hedge trimmers, grass clippers, saws, drills, hammers, spades, tampers and other electrical equipment, one man can do the work of several. *You can have electricity available anywhere* with Onan Portable Electric Plants. Mounted on dollies, Onan Electric Plants can be wheeled right to the job. Plenty of plug-in electric power is instantly available. Many lightweight A.C. and D.C. models— 400 to 5,000 watts.

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Hydroganic Tree Feeding

By B. T. Thompson
Andrew Wilson, Inc., Springfield, N. J.
With a Power Sprayer and the Tree Feeding Needle

Trees are our largest perennial plants. They require a steady supply of available plant foods.

The plant food elements, called "principal" because they are needed in larger quantity than the so-called "trace" elements, are Nitrogen, Phosphorus, Potassium, Calcium and Magnesium. However, just as important as the "principal" elements are the "trace" elements such as iron, manganese, boron, copper, zinc, sulphur, molybdenum and possibly others. These "trace" elements are in the natural organic materials.

Chemical fertilizers are excellent applied to annual herbaceous crops. These plants come up in the spring, mature, the harvest is gathered and the crop remnants removed from the area and discarded or composed. But trees are perennials as stated above. Trees need plant foods, including the trace elements all through the season. Even in the winter there is a certain amount of root feeding in preparation for the coming spring growth. Of course, for quick stimulation of a tree in the spring, a water soluble fertilizer will show surprising results. But for slow, steady,

healthy growth natural organic materials are indicated.

In the forest this necessary plant food is supplied by the rotting down of fallen leaves, branches, weed debris, etc. On cultivated areas, however, and especially lawn areas, this natural plant food is lacking. The fallen leaves are religiously raked up from the lawns, the natural foods they contain are not restored to the soil and consequently the soil about shade trees gradually loses its fertility. This organic matter should be returned to the soil and there is no better or easier method than the Hydroganic System.

A tree may be fed by three different methods with *organic* fertilizers:

1. Broadcasting fertilizer on the ground about the tree. This is the worst, most wasteful and least efficient method.

2. Punching holes with a crowbar or other device about the tree and putting the fertilizer in the holes. This is the old fashioned way. It works very well if the holes are punched to at least 18" deep and are properly spaced. It is quite a laborious operation and the fertilizer is not efficiently dispersed.

3. Use of a high pressure sprayer with the tree feeding needle is the easiest and quickest method—provided the fertilizer is ground fine enough to avoid clogging of nozzles and screens. This is the *Hydroganic System.*

Apparatus Required

1. A power sprayer, preferably having a tank holding at least 50 gallons—and capable of generating at least 300 lbs. pressure per square inch.

2. A "tree feeding needle." This is a steel tube about four feet long, with a hard steel point at one end, two opposite 3/16" outlet holes transversely in the tube just above the steel point. The other end of the "needle" is threaded into a pipe tee to which are coupled other fittings to act as a handle and a rapid acting cut-off valve to control flow of water. The hose from the spray tank is screwed to the cut-off valve.

Materials Needed for Feeding With Organic Base Fertilizer

1. An *organic base* fertilizer ground fine enough to pass through the screens of the sprayer without clogging.

2. A wetting agent *(not soap powder)* which, when mixed with the water in the spray tank, will wet the fertilizer as it is put into the tank, keep it easily suspensible and prevent it from agglomerating. It must be understood that the resulting mixture will not be a solution. It is a suspension of insoluble particles and must be kept constantly agitated to prevent the fertilizer from settling to the bottom of the spray tank.

(Continued on Page 25)

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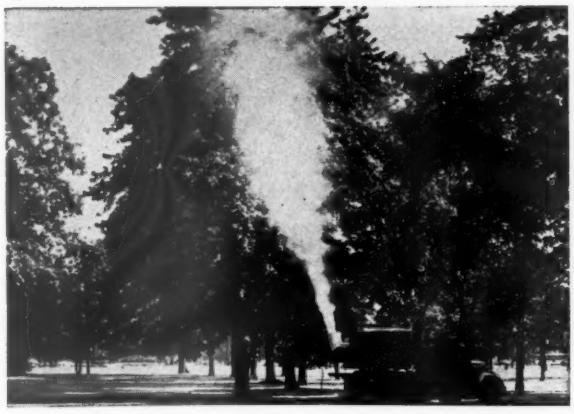

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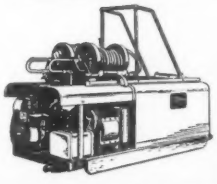

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Stump Removal—Pontiac Style

By Harold Schick
City Forester, Pontiac, Mich.

Stump removal has been an expensive process for the Pontiac Parks and Recreation Department. Grubbing out a stump requires much time and labor and is an important cost item to us.

Realizing that grubbing out the whole stump was too expensive for us, we decided to try chemical decomposition of stumps. Three to five holes of two inches diameter, six to eight inches deep were drilled in a series of stumps and Potassium Nitrate was added in concentrated solution. Copper Sulfate was also added to other stumps in a concentrated solution, holes being of same number and size. After one year stumps were investigated for decaying results. Stumps did start to decay in vicinity of holes where chemical was applied, but the process was too slow for our purposes.

In the fall (1949) we began to try wedges, axes and sledge hammer on several stumps to determine how much time it would take to split out the stump below ground level. After completely splitting out two or three stumps six inches below ground level, we decided to try a twenty-inch chain saw (Homelite). First we dug away the soil one foot around the base of the stump. Then we chipped away the bark with an axe to prevent any gravel or stone from dulling the blade of the saw. This worked very well so we decided to continue this method. In many cases interfering roots are chopped before using the saw to prevent chain saw from grinding into the dirt.

Removing stump with chain saw as described by Harold Schick, City Forester at Pontiac, Mich.

After removing more than seventy stumps by this method, we have only run into one nail with our chain saw, which is less than the nails encountered in the body wood or main part of the trunk. there are still some stumps where it is impractical to use the chain saw, especially where stumps are punk and where concrete, walks, drive, or curb is too close to the stump.

Where stumps are three feet or over in diameter, a four-foot chain saw (Disston) is used. When using the four-foot chain saw a two-foot clearance for the motor is dug at the base of the stump one-half way around.

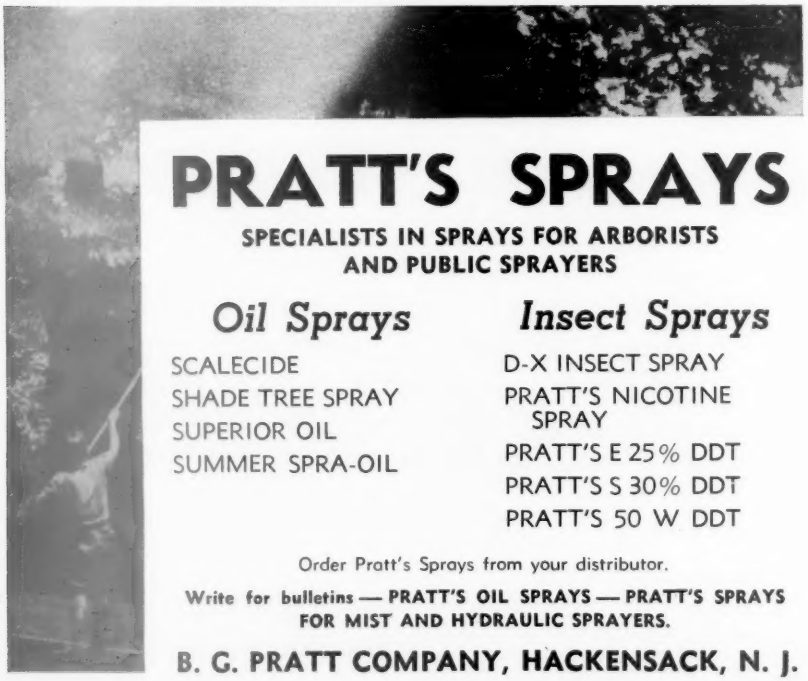
In some cases stumps can not be cut all the way through with the chain saw without first sawing then remove the saw and split off the portion cut before proceeding to cut again. This allows more clearance for the chain saw.

Our cost for the stump removal six inches below ground level was $8.05 per stump. This figure is based on an average of sixty-nine stumps that were removed. These stumps averaged twenty-two to twenty-five inches in diameter, and one and one-half to two feet high. The cost included labor, use of equipment, (trucks, power saw, pick-up) and hauling away stump chips.

Where there was a danger of suckers growing from the stump, a mixture of one pint of 2, 4, 5-D in three gallons of kerosene was applied on the remains of the stump. No sprouting has occurred on the stumps treated up to the present time.

After stumps have been removed six inches below ground level, chips are raked up, hole is covered up and the area is left neat and clean. In many cases, grass has been seeded in soil over the stump by abutting property owner. Grass is growing (this spring 1950) and the average person would not know that a stump or tree had ever been at that location.

Paper given at the Nursery and Landscape Conference, Michigan State College, July 13, 1950.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Tree Feeding

(Continued from Page 23)

Method of Use

The water is placed in the sprayer tank. The agitator is started. The wetting agent is slowly put into the water. Then the fine ground organic base fertilizer is dumped *slowly* into the tank. You are now ready to insert the "needle" into the soil about the tree. Push the needle into the soil about six inches, open the valve and the rush of water and fertilizer carries the needle downward easily with very little push from the operator needed to carry it down 18" to 24" or more if desired.

The number of holes needed to feed a given tree will depend on the breast height diameter of the tree. For a tree 10 inches in diameter thirty to forty pounds of fertilizer will be required, that is three to four pounds of fertilizer per inch diameter. Make as many holes as pounds of fertilizer to be used. For a ten-inch tree means about 30 holes, spaced regularly about the tree. It is best to start the circle of holes about three feet beyond the spread of the branches. Complete this circle about the tree. Then make another circle three or four feet nearer the trunk of the tree and so on until the operation is complete.

Proportions of Water, Fertilizer and Wetting Agent

The usual, and successful practice is to use 100 lb. of fertilizer to 200 gallons of water plus 1 lb. to 2 lbs. of Wetting Agent.

The wetting agent can be any of the new synthetic, non-soap, non-alkaline powders, of the sulfated types, such as sulfated monogrycerides. These can be purchased cheaply in grocery stores.

Advantages of the Hydroganic System

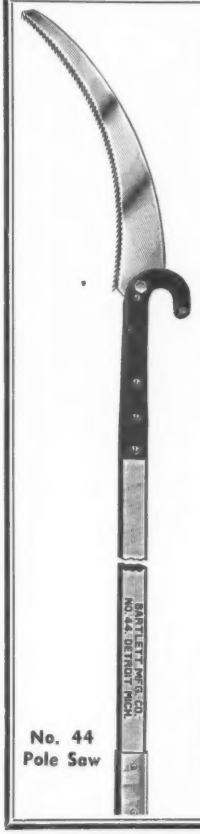
1. This method provides an additional and essential use for a power sprayer, whether in the hands of a commercial operator or on a private estate. The more days of work per year you can get out of an expensive piece of machinery, the greater justification of its cost.

2. Feeding by the Hydroganic System is more than four times as fast as by the old crowbar method. One man, working alone, can put in half a ton or more of fertilizer per day.

3. The Hydroganic System does three important things not accomplished by any other procedure.

   (a) It aerates the soil and loosens it.
   (b) It sends water right down to the roots.
   (c) It provides long lasting organic food for the trees, helping them to survive excessive drought periods.

To sum up, the Hydroganic System offers a more efficient, more rapid and more economical way to keep your trees healthy, and luxuriant.



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Authors and Books

The following books may be ordered from TREES Magazine, Box 5607, Cleveland, Ohio.

BERNHARD EDUARD FERNOW, by Andrew Denny Rodgers III. Princeton University Press, Princeton, N. J. 623 pgs. $7.50.

A Story of North American Forestry

Fernow was the first professional forester in North America. When he arrived from Germany, a forester was thought of as a kind of Robin Hood; today forestry is a recognized branch of biology, and there are 18,000,000 acres of forest reservations in the United States and Canada.

Of course all this progress cannot be credited to Fernow, but he was the leading American forester from 1876 until his death in 1923, and the story of his life, told in detail in this book, is in fact the history of forestry in North America.

As an organizer of the forestry movement, as a practicing forester at Slatedale, Pennsylvania, as first chief of the U. S. Forest Service, as dean of the first professional forestry school in America at Cornell, as editor of *Forestry Quarterly*, as dean of the faculty of forestry at the University of Toronto, and as president of the Society of American Foresters and the Canadian Society of Forest Engineers, Fernow knew personally nearly all the leaders in early American forestry. Henry S. Graves, Gifford Pinchot, Theodore Roosevelt, Clifford Durand Howe, Charles E. Bessey, Eugene W. Hilgard, J. T. Rothrock, V. M. Spalding, Filibert Roth and others are prominent in the book, and their careers in forestry are described.

Especially interesting is the account of the growth of forestry from a popular propaganda movement, emphasizing "Woodman Spare That Tree" and Arbor Days, to recognition as a science and a profession, with branches such as silviculture, dendrology, forest ecology, and wood technology.

In this biography of Bernhard Eduard Fernow, based on unpublished papers and the voluminous records in contemporary forestry journals, Andrew Denny Rodgers has written the basic work on the history of forestry in North America.

* * * *

FARMING AND GARDENING IN THE BIBLE, by Alastair S. MacKay. Rodale Press, Emmaus, Penna. 280 pgs. illus. $3.00.

Here is a reverent and inspiring book for every Bible reader who loves the country . . . for every gardener and farmer who reads the Scriptures. For the Bible, the world's most spiritual book and our sure guide to eternal life, is also one of the most "down-to-earth" books in literature. It is chock-full of a multitude of details of the daily life of a rural people, including hundreds of references to plants and their culture and to animal husbandry. Now comes Commander MacKay to screen this great natural wealth scattered haphazardly from Genesis to Revelation, organizing it all into smoothly flowing chapters.

There are hundreds of retold anecdotes in *Farming and Gardening in the Bible*, but wherever possible the author has let the Bible speak for itself, in the familiar text of the Authorized King James version. As you read these well-loved words, you wonder why the significance of the country background of the Bible did not strike you sooner. As never before, you realize that *the people of the Bible were countryfolk*, their speech country talk, their problems and their rejoicings rural ones.

Farming and Gardening in the Bible is more than a history of husbandry in the Holy Land. It is equally the story of the countrymen and countrywomen who guided the plow and gleaned the grain, who tramped the vintage with merry shouts, or distilled fine perfume and ointment in the temple precincts. It is the fascinating story of *their loves and their hates, their attainments and their backsliding, their wisdom and their ignorance.*

Farming and Gardening in the Bible is undenominational, free from theological dogma and bias, yet deeply reverent and inspiring. While it has been planned for the general reader, it is also an invaluable source and reference book for ministers, Sunday School teachers, and Bible students.

* * * *

FIFTY YEARS OF FORESTRY IN THE U. S. A. Edited by Robert K. Winters. Society of American Foresters, Mills Bldg., Washington 6, D. C. 385 pgs. illus. $4.00.

The dynamic story of the growth of forestry is told in a new publication entitled, *"Fifty Years of Forestry in the U. S. A."* Issued by the Society of American Foresters, the book was specially written to highlight the developments in forest practices and technique during the first half of the 20th Century.

Nineteen eminent foresters, all of whom observed and contributed to the forestry movement, have produced this authoritative volume. It was compiled under the guidance of the Society's Committee on History of Forestry, of which Robert K. Winters of Columbus, Ohio, is chairman.

A partial list of subjects treated include forest protection, silviculture, forest management, forest utilization, range management, wildlife management, and forest influences. All are described by nationally known specialists.

Among the chapter authors are Lyle F. Watts who writes on the work of the U. S. Forest Service; William B. Greeley who describes progress in industrial forestry; and Joseph S. Illick who tells about state forestry. In addition, developments in farm forestry are explained by Joseph F. Kaylor; the influence of citizen and trade associations by Charles A. Gillett; forestry education by Ralph S. Hosmer; and forest research by Samuel T. Dana. The concluding chapter on America and world forestry is by S. B. Show.

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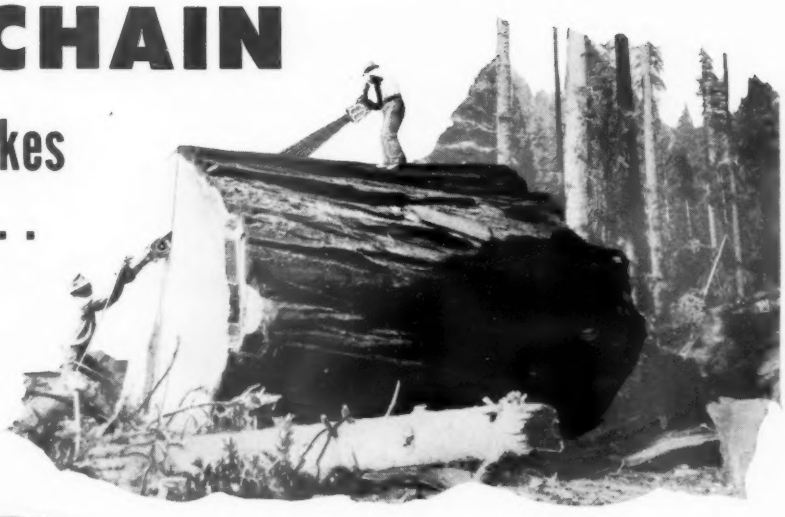

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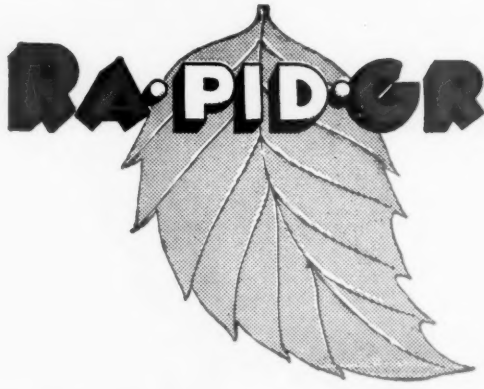

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